

AD-A189 765

MECHANISMS MEDIATING PERCEPTION OF COMPLEX ACOUSTIC
PATTERNS(U) WISCONSIN UNIV-MILWAUKEE DEPT OF PSYCHOLOGY
R M WARREN 20 NOV 87 AFOSR-TR-87-1636 AFOSR-86-0304

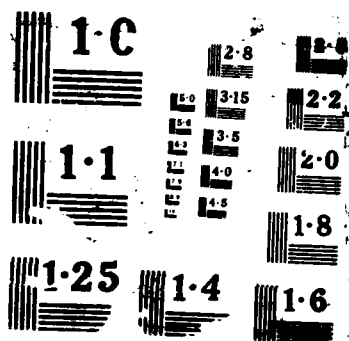
1/1

UNCLASSIFIED

F/G 5/8

NL





DTIC FILE COPY

(2)

UNCLASSIFIED
SECURITY CLASSIFICATION OF THIS PAGE

DOCUMENTATION PAGE

1a REPORT SE UNCLAS		AD-A189 765		1b RESTRICTIVE MARKINGS	
2a SECURITY				3 DISTRIBUTION / AVAILABILITY OF REPORT Approved for public release; distribution unlimited.	
2b DECLASSIFICATION / DOWNGRADING SCHEDULE				5 MONITORING ORGANIZATION REPORT NUMBER(S) AFOSR-TR- 87-1636	
4 PERFORMING ORGANIZATION REPORT NUMBER(S)				7a NAME OF MONITORING ORGANIZATION Air Force Office of Scientific Research/NL	
6a NAME OF PERFORMING ORGANIZATION University of Wisconsin-Milwaukee		6b OFFICE SYMBOL (if applicable) NL		7b ADDRESS (City, State, and ZIP Code) Building 410 Bolling AFB, DC 20332-6448	
6c ADDRESS (City, State, and ZIP Code) Psychology Department Milwaukee WI 53201		8a NAME OF FUNDING / SPONSORING ORGANIZATION AFOSR/NL		9 PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER AFOSR-86-0304	
8b OFFICE SYMBOL (if applicable) NL		10 SOURCE OF FUNDING NUMBERS			
8c ADDRESS (City, State, and ZIP Code) Building 410 Bolling AFB, DC 20332-6448		PROGRAM ELEMENT NO 61102F		PROJECT NO. 2917	
11 TITLE (Include Security Classification) (U) Mechanisms Mediating Perception of Complex Acoustic Patterns		TASK NO. A4		WORK UNIT ACCESSION NO	
12 PERSONAL AUTHOR(S) Dr. Richard M. Warren		13a TYPE OF REPORT FINAL		13b TIME COVERED FROM 01AUG86 TO 30JUL87	
14 DATE OF REPORT (Year, Month, Day) 87 10 20		15 PAGE COUNT 3		16 SUPPLEMENTARY NOTATION UNIVERSITY RESEARCH INSTRUMENTATION PROGRAM	
17 COSATI CODES		18 SUBJECT TERMS (Continue on reverse if necessary and identify by block number) Human hearing; psychophysics; instrumentation.			
FIELD		GROUP			
SUB-GROUP					
1.1					
1.2					
19 ABSTRACT (Continue on reverse if necessary and identify by block number) Five items of equipment were acquired under this instrumentation grant: a filter system for audio waveforms, a two channel audio synthesizer, a two track recorder, a two channel FFT system, and a sound spectrograph. All are used in a laboratory devoted to the relationship between acoustic features and auditory perception. <i>Keywords:</i>					
20. DISTRIBUTION / AVAILABILITY OF ABSTRACT <input checked="" type="checkbox"/> UNCLASSIFIED/UNLIMITED <input checked="" type="checkbox"/> SAME AS RPT <input type="checkbox"/> DTIC USERS					
21 ABSTRACT SECURITY CLASSIFICATION UNCLASSIFIED					
22a NAME OF RESPONSIBLE INDIVIDUAL Dr. John F. Tangney		22b TELEPHONE (Include Area Code) (202) 767-5021		22c OFFICE SYMBOL NL	

DTIC
ELECTE
NOV 17 1987
S D

AFOSR-TR- 87 - 1636

Report AFOSR-86-0304 (Instrumentation Program)

MECHANISMS MEDIATING THE PERCEPTION OF COMPLEX ACOUSTIC PATTERNS

Richard M. Warren
University of Wisconsin-Milwaukee
Department of Psychology
Milwaukee, Wisconsin 53201

14 August 1987

Final Technical Report

Prepared for
AIR FORCE OFFICE OF SCIENTIFIC RESEARCH
Building 410
Bolling Air Force Base, DC 20332-6448



Accession For	
NTIS CRA&I	<input checked="checked" type="checkbox"/>
DTIC TAB	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification	
By _____	
Distribution/	
Availability Codes	
Dist	Avail and/or Special
A-1	

87 11 8 206

Final Technical Report

Each piece of equipment purchased with the funds provided by this Instrumentation Grant has been used in several experiments conducted under AFOSR Research Grant 85-0260, "Mechanisms mediating the perception of complex acoustic patterns." None of the equipment is dedicated to any particular experimental paradigm, and all items have had a wide general usage in several experiments. I will describe how one experiment has made use of each of the items purchased under the equipment grant.

I have been examining the perception of complex tones mistuned from unison as one of the topics of my AFOSR funded research. These tones were repeated on the digital delay segment of the comb filter, the number of harmonics passed was under the control of the high-low filter system, and the temporal shaping controlled by the Coulbourn shaping system. The extent of mistuning of tones was accomplished by the dual channel synthesizer used as an accurate clock to govern the repetition rate of the stored waveforms. The two-channel FFT analyzer permitted examination of the harmonic structure of the two complex tones simultaneously, as well as measuring the fundamental frequencies. The spectrographic display permitted a direct examination of the spectral interaction occurring when the complex tones were mixed, as well as providing a hard copy record of this stimulus. The various perceptual phenomena observed (pitch glides, complex beats, etc.) depended upon the frequency components present, and the stimuli were band-passed, low-passed, and high-passed using the filters purchased under the grant to determine the spectral requirements for the phenomena under investigation. Finally, these stimuli are difficult to prepare, and the high-quality two-track recorder permitted storage and regeneration of the stimuli when desired.

Attached is a list of the equipment budgeted under the grant, including the manufacturer, model and cost of the equipment purchased.

Budgeted Equipment:

Filter	
\$20,739.00	
Dual Channel Synthesizer	10,215.00
Two Track Recorder	8,163.00
Two channel FFT Analyzer	17,113.00
Speech Spectrographic Display	<u>13,770.00</u>
	\$70,000.00

Equipment Ordered:

Filtering System:	\$17,672.97
Wavetek Hi/Lo Filter 852 (\$11,573.58)	
Eventide Digital Comb Filter H969 (\$4,109.71)	
Coulbourn Temporal Shaping Filter Sys. (\$1,989.68)	
Hewlett Packard Dual Channel Synthesizer HP3326A	10,240.00
Otari 2-track Recorder w/ Autolocator MTR 10-C-L	6,595.13
Two Channel FFT Analyzer System:	21,573.20
Tektronix 2-Channel Digital Storage Unit (\$5,873.20)	
Brüel & Kjaer 2-Channel Analyzer 2034 (\$15,700.00)	
Kay Elemetrics Spectrograph SSD 8800	<u>13,932.30</u>
	\$70,013.60*

*The \$13.60 overage was paid by the University of Wisconsin-Milwaukee Graduate School.

END

DATE

FILMED

APRIL

1988

DTIC